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(54) Title: **ASB TRANSCRIPTION REPRESSOR PROTEINS AND NUCLEIC ACIDS AND THEIR APPLICATION IN EXPAN-**
SION OF STEM CELLS

(57) Abstract: The present invention relates to methods for expansion of stem or progenitor cells. These methods rely on Asb-a polypeptides or nucleic acids to temporarily suppress differentiation of the cells, thus allowing proliferation and self-renewal of the stem or progenitor cells. Asb-a polypeptides and coding sequences define a class of polypeptides and nucleic acids that are both structurally and functionally highly conserved among vertebrates. Asb-a polypeptides contain 6 ankyrin repeats and a SOCS box that mediate the effect of the polypeptide on the regulation of specific subsets of genes involved in differentiation. The invention discloses various methods to increase the intracellular concentration of an Asb-a polypeptide for suppression of terminal differentiation of the stem or progenitor cells. The invention further relates to Asb-a polypeptides and nucleic acids, vectors and host cells for use in methods for their production and for use in the method for expansion of stem or progenitor cells, as well as to stem or progenitor cells containing exogenous Asb-a polypeptides and nucleic acids.